Grade 8[1,2]—PBA

This blueprint is the evolution of Table D.7 in the ITN,[3] providing more specificity as well as a further iteration of draft design elements covered in the ITN.

Part 1a. Part 1a consists of eight (8) tasks, each worth 1 point (these are tasks of Type I.1[4]).

- Each task generates evidence for a single evidence statement in the table and each evidence statement is assessed by at most one task.
- The number of tasks in each content domain is specified by the Form Construction Tables.
- Probabilities are given in cases where sampling is necessary (because the number of tasks in the leftmost column is less than the number of corresponding evidence statements). In these cases, the probability column specifies the probability that any given evidence statement will be assessed on any given form.
- Calculation aids are not provided to students for tasks in Part 1a except for appropriate accessibility purposes.

Table 8-PBA(1a). Evidence Statements for Grade 8 PBA Part 1a

No. Tasks[5]	Probability[6]	Claim Code[8]	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices[9]	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
1	2/3	1	8.EE.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 1/3^3 = 1/27$	i) Tasks do not have a context. ii) Tasks center on the properties and equivalence, not on simplification. For example, a task might ask a student to classify expressions according to whether or not they are equivalent to a given expression.	MP.7	Work with radicals and integer exponents
	1/6	1	8.EE.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as* 3×10^8 *and the population of the world as* 7×10^9*, and determine that the world population is more than 20 times larger.*	-	MP.4	Work with radicals and integer exponents
	1/6	1	8.EE.4-1	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used.	i) Tasks have "thin context" or no context. ii) Rules or conventions for significant figures are not assessed. iii) 20% of tasks involve both decimal and scientific notation, e.g., write $120 + 3 \times 10^4$ in scientific notation.	MP.6, MP.7 MP.8	Work with radicals and integer exponents

[1] Function notation is not required in Grade 8. (CCSS Footnote, p. 55.)
[2] Where calculation aids are provided, these perform only the following functions: addition, subtraction, multiplication, and division of signed whole numbers and decimals; negation; square roots; and cube roots
[3] See Table D.7, "Grade 8, Performance Based Assessment Blueprint – Preliminary Draft – Operational portion (equating and field testing items not yet included)," in http://myflorida.com/apps/vbs/vbs_pdf.download_file?p_file=F28718_AppendixPagesITN201231PARCCItemDevelopmentFinal.pdf.
[4] See Table D.2, "Task Types and Descriptions," in http://myflorida.com/apps/vbs/vbs_pdf.download_file?p_file=F28718_AppendixPagesITN201231PARCCItemDevelopmentFinal.pdf.
[5] This is the number of task(s) that will appear on a form to generate evidence for one or more of the indicated evidence statement(s).
[6] Probabilities are given in cases where sampling is necessary (because the number of tasks in the leftmost column is less than the number of corresponding evidence statements). In these cases, the probability column specifies the probability that any given evidence statement will be assessed on any given form. Note that the sum of the probabilities over the indicated set of evidence statements equals the number of tasks to be apportioned among them. Note also that in any case where $T > 1$ tasks are to be apportioned among $E > T$ evidence statements, all E-choose-T unordered T-tuples of distinct evidence statements are considered equally likely. For example, if 3 tasks are to be apportioned among 12 evidence statements, then all 220 possible unordered triples of distinct evidence statements are considered equally likely; it follows that each individual evidence statement has probability 3/12 = 1/4.
[8] **1** = Sub-Claim A but not Sub-Claims C or E. **2** = Sub-Claims A and C. **3** = Sub-Claims A and E. **4** = Sub-Claim D. **5** = Sub-Claim B. (If more than one code is listed, points are divided evenly among listed codes, with any remainder coded to **1**.) See the Grade Summary for totals by claim code.
[9] Practices listed in the top half of the cell indicate that tasks are *ipso facto* Practice-forward for that practice; practices listed in the bottom half are potentially Practice-forward for that practice, depending on the task. See also Appendix F (Revised), "Illustrations of Innovative Task Characteristics," particularly section F(A)(2), "Practice-Forward Tasks," and especially Table F.f, "General Cases of Practice-Forward Tasks (not a complete list)", in http://myflorida.com/apps/vbs/vbs_pdf.download_file?p_file=F10407_ITN201231AppendixF11012.pdf; see also Appendix D, "Supporting Design Documents for Mathematics," particularly section IV, "Operationalizing Assessment of the Mathematical Practices," and section V, "Practice-forward tasks," in http://myflorida.com/apps/vbs/adoc/F28718_AppendixPagesITN201231PARCCItemDevelopmentFinal.pdf

No. Tasks[5]	Probability[6]	Claim Code[8]	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices[9]	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
1	-	1	8.EE.7.b	Solve linear equations in one variable. b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms	i) Tasks do not have a context.	MP.6, MP.7	Analyze and solve linear equations and pairs of simultaneous linear equations.
1	-	1	8.EE.8.a	Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersections of their graphs, because points of intersection satisfy both equations simultaneously.	i) Tasks do not have a context.	MP.2, MP.5, MP.6, MP.7	Analyze and solve linear equations and pairs of simultaneous linear equations.
1	1/2	1	8.F.1-1	Understand that a function is a rule that assigns to each input exactly one output.	i) Tasks do not involve the coordinate plane or the "vertical line test." ii) Tasks do not require knowledge of the concepts or terms *domain* and *range*. iii) 20% of functions in tasks are non-numerical, e.g., the input could be a person and the output could be his or her month of birth.	MP.2	Define, evaluate, and compare functions.
	1/2	1	8.F.1-2	[Understand that] the graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	i) Functions are limited to those with inputs and outputs in the real numbers. ii) Tasks do not require knowledge of the concepts or terms *domain* and *range*. iii) 80% of tasks require students to graph functions in the coordinate plane or read inputs and outputs from the graph of a function in the coordinate plane. iv) 20% of tasks require students to tell whether a set of points in the plane represents a function.	MP.2, MP.5	
1	1/3	1	8.G.1a	Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length.	i) Tasks do not have a context.	MP.3,MP.5, MP.8	Understand congruence and similarity using physical models, transparencies, or geometry software.
	1/3	1	8.G.1b	Verify experimentally the properties of rotations, reflections, and translations: b. Angles are taken to angles of the same measure.	i) Tasks do not have a context.	MP.3,MP.5, MP.8	Understand congruence and similarity using physical models, transparencies, or geometry software.
	1/3	1	8.G.1c	Verify experimentally the properties of rotations, reflections, and translations: c. Parallel lines are taken to parallel lines.	i) Tasks do not have a context.	MP.3,MP.5, MP.8	Understand congruence and similarity using physical models, transparencies, or geometry software.

No. Tasks[5]	Probability[6]	Claim Code[8]	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices[9]	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
1	-	1	7.RP.2b	Recognize and represent proportional relationships between quantities: b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	i) . Pool should contain tasks with and without contexts.ii) Tasks sample equally across the listed representations (graphs, equations, diagrams, and verbal descriptions).	MP.2, MP.8 MP.5	Analyze proportional relationships and use them to solve real-world problems.
1	-	1	7.RP.2c	Recognize and represent proportional relationships between quantities: c. Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.*	i) Tasks have a context.	MP.2, MP.8	Analyze proportional relationships and use them to solve real-world problems.
1	-	1	7.NS.2c	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers.	i) Tasks do not have a context. ii) Tasks are not limited to integers. iii) Tasks may involve products and quotients of 2 or 3 rational numbers. iv) Tasks require students to compute a sum or difference, or demonstrate conceptual understanding for example by producing or recognizing an expression equivalent to a given expression. For example, given the product $(-8)(6)/(-3)$, the student might be asked to recognize or produce the equivalent expression $-(8/3)(-6)$.	MP.7	Apply and extend previous understandings of operations with fractions to add, subtract, multiply and divide rational numbers.

Part 1b. Part 1b consists of one (1) task worth 2 points, totaling 2 points in all.

Table 8-PBA(1b) lists evidence statements for Part 1b. Tasks for this part satisfy the following constraints:

- Each task generates evidence for a single evidence statement key in the table.
- Each of the evidence statements in Table 8-PBA(1b) is equally likely to be assessed.
- Calculation aids are not provided to students for tasks in Part 1b except for appropriate accessibility purposes.

Table 8-PBA(1b). Evidence Statements for Grade 8 PBA Part 1b

Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
1	8.G.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	i) Tasks do not have a context.	MP.2, MP.7	Understand congruence and similarity using physical models, transparencies, or geometry software.
1	8.G.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	i) Tasks have “thin context” or no context.	MP.2, MP.3, MP.5	Understand congruence and similarity using physical models, transparencies, or geometry software.
1	8.G.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two dimensional figures, describe a sequence that exhibits the similarity between them.	i) Tasks do not have a context.	MP.2, MP.7	Understand congruence and similarity using physical models, transparencies, or geometry software.

Part 1c. Part 1c consists of two (2) tasks, each worth 1 point (Type I.1). Table 8-PBA(1b) lists evidence statements for Part 1b. Tasks for this part satisfy the following constraints:

- Each task generates evidence for a single evidence statement in the table and each evidence statement is assessed by at most one task.
- The number of tasks in each content domain is specified by the Form Construction Tables.
- Probabilities are given in cases where sampling is necessary (because the number of tasks in the leftmost column is less than the number of corresponding evidence statements). In these cases, the probability column specifies the probability that any given evidence statement will be assessed on any given form.
- A calculation aid of the specified kind can be provided to students for these tasks.[10]

Table 8-PBA(1c). Blueprint for Grade 8 PBA Part 1c

No. Tasks	Probability	Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
2	2/3	1	8.EE.4-2	Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	i) Tasks have "thin context". ii) The testing interface can provide students with a calculation aid of the specified kind for these tasks.	MP.6, MP.7 MP.8	Work with radicals and integer exponents
	2/3	1	8.EE.5-1	Graph proportional relationships, interpreting the unit rate as the slope of the graph.	i) Pool should contain tasks with and without contexts. ii) The testing interface can provide students with a calculation aid of the specified kind for these tasks.	MP.1, MP.5	Understand the connections between proportional relationships, lines, and linear equations.
	2/3	1	8.EE.5-2	Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has a greater speed.*	i) Pool should contain tasks with and without contexts. ii) The testing interface can provide students with a calculation aid of the specified kind for these tasks.	MP.7	Understand the connections between proportional relationships, lines, and linear equations.

[10] If so, then students will not be able to return to tasks in Table 8-PBA(1a) or Table 8-PBA(1b) after beginning work on these tasks.

Part 2.

Sub Claim C: Highlighted Practices MP.3,6 with Connections to Content: expressing mathematical reasoning. The student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.

The formulation *"Use drawings, words, and/or equations"* can be useful in tasks generating evidence for Claim C (expressing mathematical reasoning).

Assessing students' expressions of mathematical reasoning typically requires some hand scoring of tasks. However, PARCC is interested in possible technological innovations that can allow tasks assessing this aspect of the standards to be machine scored or partially machine scored. PARCC is also interested in transformative technological innovations that can enrich the range of activities beyond what is possible with a paper test (e.g., assembling shapes to prove or disprove a conjecture).

Part 2 consists of four (4) tasks: two (2) three-point tasks and two (2) four-point tasks, totaling 14 points in all.

Table 8-PBA(2) (see below) lists evidence statements for Part 2. Tasks for this part satisfy the following constraints:

- Each task on Part 2 generates evidence for a single evidence statement in the table and each evidence statement is assessed by at most one task.
- The number of tasks in each content and process domain is specified by the Form Construction Tables.
- Evidence Statements within a given content or process domain are equally likely to be assessed.
- For Evidence Statements with more than one standard listed within the Content Scope, contractors may select one or more while keeping a balanced pool.
- A calculation aid of the specified kind can be provided to students for these tasks.[12]

Table 8-PBA(2).[13] Evidence Statements for Grade 8 PBA Part 2

Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
2	8.C.1.1	Base reasoning on the principle that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane.[14] Content Scope: Knowledge and skills articulated in 8.EE.6	i) Note especially the portion of 8.EE.6 after the semicolon.	MP.2, MP.3, MP.7, MP.8	Understand the connections between proportional relationships, lines, and linear equations.
2	8.C.1.2	Base reasoning on the principle that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane. Content Scope: Knowledge and skills articulated in 8.EE.8a		MP.2, MP.3, MP.5, MP.6, MP.7	Analyze and solve linear equations and pairs of simultaneous linear equations
2	8.C.2	Given an equation or system of equations, present the solution steps as a logical argument that concludes with the set of solutions (if any).[15] Content Scope: Knowledge and skills articulated in 8.EE.7a, 8.EE.7b, 8.EE.8b		MP.3, MP.6	Analyze and solve linear equations and pairs of simultaneous linear equations
2	8.C.3.1	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.[16]	i) Note especially the portion of 8.F.3 after the semicolon. Tasks require students to prove that a given function is linear or nonlinear.	MP.3, MP.6	Define, evaluate, and compare functions.

[12] If so, then students will not be able to return to tasks in Table 8-PBA(1a) or Table 8-PBA(1b) after beginning work on these tasks.
[13] This table need not be considered complete or final. For context see Appendix D, "Sub Sub-Claim C: Highlighted Practices MP.3,6 with Connections to Content: expressing mathematical reasoning," particularly "Evidence Statements for Sub-Claim C," in http://myflorida.com/apps/vbs/vbs_pdf.download_file?p_file=F28718_AppendixPagesITN201231PARCCItemDevelopmentFinal.pdf. Note also that some Dana Center prototype tasks for sub-claim C will include possible candidates for evidence statements for sub-claim C.
[14] Many standards in grades 7, 8, and high school call for this kind of reasoning; the principle cited underlies all work with graphing equations in two variables such as y = 3x + 2, etc.
[15] See ITN Appendix F, Table F.f, "General Cases of Practice-Forward Tasks (not a complete list)," MP.6 (Attend to precision); see also ITN Appendix D, "How the Claim Derives from the Standards," in "Sub-Claim C: Highlighted Practices MP.3,6 with Connections to Content: Expressing Mathematical Reasoning." Reasoned solving is a theme in the standards from grade 6 on into high school (cf. 6.EE.5, 8.EE.5, A-REI.A). See also PARCC Model Content Frameworks, p. 56.
[16] See ITN Appendix D, "How the Claim Derives from the Standards," in "Sub-Claim C: Highlighted Practices MP.3,6 with Connections to Content: Expressing Mathematical Reasoning"

Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
		Content Scope: Knowledge and skills articulated in 8.F.3.2			
2	8.C.3.2	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 8.G.2, 8.G.4		MP.3, MP.5, MP.6	Understand congruence and similarity using physical models, transparencies, or geometry software.
2	8.C.3.3	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. Content Scope: Knowledge and skills articulated in 8.G.5		MP.3, MP.5, MP.6	Understand congruence and similarity using physical models, transparencies, or geometry software.
2	8.C.4.1	Present solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equals signs appropriately (for example, rubrics award less than full credit for the presence of nonsense statements such as 1 + 4 = 5 + 7 = 12, even if the final answer is correct), or identify or describe errors in solutions to multi-step problems and present corrected solutions. Content Scope: Knowledge and skills articulated in 8.EE.8c	i) See ITN Appendix F, section A, "Illustrations of innovative task characteristics," sub-section 6, "Expressing mathematical reasoning," sub-section "Illustrative tasks that require students to express mathematical reasoning," the problem of the two shepherds.	MP.1, MP.2, MP.3, MP.6, MP.7	Analyze and solve linear equations and pairs of simultaneous linear equations
2	8.C.5.1	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions.[17] Content Scope: Knowledge and skills articulated in 8.EE.6	i) Note especially the portion of 8.EE.6 before the semicolon.	MP.2, MP.3, MP.5	Understand the connections between proportional relationships, lines, and linear equations.
2	8.C.5.2	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions. Content Scope: Knowledge and skills articulated in 8.G.2, 8.G.4		MP.2, MP.3, MP.5	Understand congruence and similarity using physical models, transparencies, or geometry software.
2	8.C.5.3	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions. Content Scope: Knowledge and skills articulated in 8.G.B	-	MP.2, MP.3, MP.5	Understand congruence and similarity using physical models, transparencies, or geometry software.

[17] Many standards in grades 6-8 and high school call for this kind of reasoning.

Part 3a.

Sub Claim D: Highlighted Practice MP.4 with Connections to Content: modeling/application. The student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or, for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), *engaging particularly in the Modeling practice*, and where helpful making sense of problems and persevering to solve them (MP.1), reasoning abstractly and quantitatively (MP.2), using appropriate tools strategically (MP.5), looking for and making use of structure (MP.7), and/or looking for and expressing regularity in repeated reasoning (MP.8).

Part 3a consists of two (2) tasks, each worth three points, totaling 6 points in all.

- There is one evidence statement for Part 3a, given in Table 3-PBA(3a) below.
- Both tasks should assess the following evidence statement with sufficient variety.
- When utilizing an Evidence Statement from PBA(1a) or PBA(1b) please note the "clarifications, limits and emphases" that accompanies the Evidence Statement.
- A calculation aid of the specified kind can be provided to students for these tasks.[18]

Table 8-PBA(3a).[19] Evidence Statement for Grade 8 PBA Part 3a

Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
4	8.D.1	Solve multi-step contextual word problems with degree of difficulty appropriate to grade 8, requiring application of knowledge and skills articulated in Tables 8-PBA(1a), 8-PBA(1b), and/or 8-PBA(1c).	Tasks may have scaffolding if necessary in order yield a degree of difficulty appropriate to grade 8.	MP.4 MP.1, MP.2, MP.5, MP.7	-

[18] If so, then students will not be able to return to tasks in Table 8-PBA(1a) or Table 8-PBA (1b) after beginning work on these tasks.
[19] This table need not be considered complete or final. For context see Appendix D, "Sub Sub-Claim C: Highlighted Practices MP.3,6 with Connections to Content: expressing mathematical reasoning," particularly "Evidence Statements for Sub-Claim C," in http://myflorida.com/apps/vbs/vbs_pdf.download_file?p_file=F28718_AppendixPagesITN201231PARCCItemDevelopmentFinal.pdf. Note also that some Dana Center prototype tasks for sub-claim C will include possible candidates for evidence statements for sub-claim C.

Part 3b.

Sub Claim D: Highlighted Practice MP.4 with Connections to Content: modeling/application. The student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or, for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), *engaging particularly in the Modeling practice*, and where helpful making sense of problems and persevering to solve them (MP.1), reasoning abstractly and quantitatively (MP.2), using appropriate tools strategically (MP.5), looking for and making use of structure (MP.7), and/or looking for and expressing regularity in repeated reasoning (MP.8).

Part 3b consists of one (1) task worth six points.

Table 8-PBA(3b) lists evidence statements for Part 3b. Tasks for this part satisfy the following constraints:

- Each task generates evidence for a single Evidence Statement in the table.
- Each of the evidence statements in Table 8-PBA(3b) is equally likely to be assessed.
- A calculation aid of the specified kind can be provided to students for these tasks.[20]

Table 8-PBA(3).[21] Equiprobable Evidence Statements for Grade 8 PBA Part 3

Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
4	8.D.2	Solve multi-step contextual problems with degree of difficulty appropriate to grade 8, requiring application of knowledge and skills articulated in 7.RP.A, 7.NS.3, 7.EE, 7.G, and 7.SP.B.	Tasks may have scaffolding if necessary in order yield a degree of difficulty appropriate to grade 8.	MP.4. MP.1, MP.2, MP.5, MP.7	-
4	8.D.3	Micro-models: Autonomously apply a technique from pure mathematics to a real-world situation in which the technique yields valuable results even though it is obviously not applicable in a strict mathematical sense (e.g., profitably applying proportional relationships to a phenomenon that is obviously nonlinear or statistical in nature).[22] Content Scope: Knowledge and skills articulated in 6.RP.A, 6.EE.C, 6.G, 7.RP.A, 7.G.B, 7.SP	Tasks may have scaffolding if necessary in order yield a degree of difficulty appropriate to grade 8.	MP.4. MP.1, MP.2, MP.5, MP.7	-
4	8.D.4	Reasoned estimates: Use reasonable estimates of known quantities in a chain of reasoning that yields an estimate of an unknown quantity.[23] Content Scope: Knowledge and skills articulated in 6.RP.A, 6.EE.C, 6.G, 7.RP.A, 7.G.B, 7.SP	Tasks may have scaffolding if necessary in order yield a degree of difficulty appropriate to grade 8.	MP.4. MP.1, MP.2, MP.5, MP.7	-

Problems of either these two kinds may involve related practices, particularly: making sense of problems and persevering to solve them (MP.1); reasoning abstractly and quantitatively (MP.2); using appropriate tools strategically (MP.5); and looking for and making use of structure (MP.7).

[20] If so, then students will not be able to return to tasks in Table 8-PBA(1a) or Table 8-PBA(1b) after beginning work on these tasks.
[21] This table need not be considered complete or final. For context see Appendix D, "Sub Sub-Claim C: Highlighted Practices MP.3,6 with Connections to Content: expressing mathematical reasoning," particularly "Evidence Statements for Sub-Claim C," in http://myflorida.com/apps/vbs/vbs_pdf.download_file?p_file=F28718_AppendixPagesITN201231PARCCItemDevelopmentFinal.pdf. Note also that some Dana Center prototype tasks for sub-claim C will include possible candidates for evidence statements for sub-claim C.
[22] See Appendix F (Revised), "Illustrations of Innovative Task Characteristics," section F(A)(2), "Practice-Forward Tasks," Table F.f, "General Cases of Practice-Forward Tasks (not a complete list)", row 4 ("Model with mathematics"), in http://myflorida.com/apps/vbs/vbs_pdf.download_file?p_file=F10407_ITN201231AppendixF11012.pdf; see also Appendix D, "Supporting Design Documents for Mathematics," section I, "Assessment Claims in Mathematics," subsection "Evidence Statements for Sub-Claim D," in http://myflorida.com/apps/vbs/adoc/F28718_AppendixPagesITN201231PARCCItemDevelopmentFinal.pdf
[23] See Appendix F (Revised), "Illustrations of Innovative Task Characteristics," section F(A)(2), "Practice-Forward Tasks," Table F.f, "General Cases of Practice-Forward Tasks (not a complete list)", row 4 ("Model with mathematics"), in http://myflorida.com/apps/vbs/vbs_pdf.download_file?p_file=F10407_ITN201231AppendixF11012.pdf; see also Appendix D, "Supporting Design Documents for Mathematics," section I, "Assessment Claims in Mathematics," subsection "Evidence Statements for Sub-Claim D," in http://myflorida.com/apps/vbs/adoc/F28718_AppendixPagesITN201231PARCCItemDevelopmentFinal.pdf

Grade 8—EOY

This blueprint is the evolution of Table D.8 in the ITN,[24] providing more specificity as well as a further iteration of draft design elements covered in the ITN.

Part 1a. Part 1a consists of nineteen (19) tasks, each worth 1 point (Type I.1). Table 8-EOY(1a) lists evidence statements for Part (1a). Tasks for this part satisfy the following constraints:

- Each task generates evidence for a single evidence statement in the table and each evidence statement is assessed by at most one task.
- The number of tasks in each content domain is specified by the Form Construction Tables.
- Probabilities are given in cases where sampling is necessary (because the number of tasks in the leftmost column is less than the number of corresponding evidence statements). In these cases, the probability column specifies the probability that any given evidence statement will be assessed on any given form.
- Calculation aids are not provided to students for tasks in Part 1a except for appropriate accessibility purposes.

Table 8-EOY(1a). Blueprint for Grade 8 EOY Part 1a

No. Tasks	Probability	Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
1	-	1	8.EE.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 1/3^3 = 1/27$	i) Tasks do not have a context. ii) Tasks center on the properties and equivalence, not on simplification. For example, a task might ask a student to classify expressions according to whether or not they are equivalent to a given expression.	MP.7	Work with radicals and integer exponents
1	-	1	8.EE.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2=p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.	i) Pool should contain tasks with and without contexts. ii) Tasks might for example take the form of algebraic word problems leading to equations $x^2 = p$ or $x^3 = p$, or geometric problems such as finding the edge length of a cubical object with a given volume. iii) In problems where $\sqrt{p}$ and $-\sqrt{p}$ are both relevant as solutions to $x^2 = p$, both of these solutions should be given. Note that $\sqrt{p}$ is nonnegative by definition. iii) Solutions to equations $x^2 = p$ or $x^3 = p$ are represented as $\sqrt{p}$ or $\sqrt[3]{p}$, respectively. iv) Manipulations such as $\sqrt{8} = 2\sqrt{2}$ are beyond the scope of grade 8. Students need not simplify a solution such as $\sqrt{8}$. But students should ultimately express the following cases in the form of whole numbers: (a) the square roots of 1, 4, 9, 16, 25, 36, 49, 64, 81 and 100; (2) the cube roots of 1, 8, 27, and 64.		Work with radicals and integer exponents
1	1/2	1	8.EE.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as* 3×10^8 *and the population of the world as* 7×10^9*, and determine that the world population is more than 20 times larger.*	-	MP.4	Work with radicals and integer exponents
	1/2	1	8.EE.4-1	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used.	i) Tasks have "thin context" or no context. ii) Rules or conventions for significant figures are not assessed. iii) 20% of tasks involve both decimal and scientific notation, e.g., write $120 + 3 \times 10^4$ in scientific notation.	MP.6, MP.7 MP.8	Work with radicals and integer exponents

[24] See Table D.3, "Grade 3, Performance Based Assessment Blueprint – Preliminary Draft – Operational portion (equating and field testing items not yet included)," in http://myflorida.com/apps/vbs/vbs_pdf.download_file?p_file=F28718_AppendixPagesITN201231PARCCItemDevelopmentFinal.pdf.

No. Tasks	Probability	Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
1	-	1	8.EE.7b	Solve linear equations in one variable. b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	i) Tasks do not have a context.	MP.6, MP.7	Analyze and solve linear equations and pairs of simultaneous linear equations.
1	-	1	8.EE.8a	Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersections of their graphs, because points of intersection satisfy both equations simultaneously.	i) Tasks do not have a context.	MP.2, MP.5, MP.6, MP.7	Analyze and solve linear equations and pairs of simultaneous linear equations.
1	-	1	8.EE.8b-1	Analyze and solve pairs of simultaneous linear equations. b. Solve systems of two linear equations in two variables algebraically.	i) 20% of tasks have a zero coefficient, e.g., as in the system $-s + (3/4)t = 2$, $t = 6$. ii) 20% of tasks have non-zero whole-number coefficients, and whole-number solutions. iii) 20% of tasks have non-zero whole-number coefficients, and at least one fraction among the solutions. iv) 20% of tasks have non-zero integer coefficients (with at least one coefficient negative). v) 20% of tasks have non-zero rational coefficients (with at least one coefficient negative and and at least one coefficient a non-integer).	MP.1, MP.6, MP.7	Analyze and solve linear equations and pairs of simultaneous linear equations.
1	-	1	8.EE.8b-2	Analyze and solve pairs of simultaneous linear equations. b. Estimate solutions [to systems of two linear equations in two variables] by graphing the equations.	i) Tasks present students with technology that allows them to (1) graph a point based on coordinates of their choosing; (2) draw a line through two points of their choosing; (3) zoom in if the student wishes to do so, rescaling the axes automatically. ii) 20% of tasks have a zero coefficient, e.g., as in the system $-s + (3/4)t = 2$, $t = 6$. iii) 20% of tasks have non-zero whole-number coefficients, and whole-number solutions. iiv 20% of tasks have non-zero whole-number coefficients, and at least one fraction among the solutions. v) 20% of tasks have non-zero integer coefficients (with at least one coefficient negative). vi) 20% of tasks have non-zero rational coefficients (with at least one coefficient a non-integer).	MP.5, MP.6, MP.7	Analyze and solve linear equations and pairs of simultaneous linear equations.
1	-	1	8.EE.8b-3	Analyze and solve pairs of simultaneous linear equations. b. Solve simple cases [of systems of two linear equations in two variables] by inspection. *For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.*	i) Tasks have whole-number or integer coefficients, one coefficient in either or both equations possibly zero. ii) One-third of tasks involve inconsistent systems, where the inconsistency is plausibly visible by inspection as in the italicized example given in standard 8.EE.8b. iii) One-third of tasks involve degenerate systems (infinitely many solutions), where the degeneracy is plausibly visible by inspection, as for example in 3x + 3y = 1, 6x + 6y = 2. iv) One-third of tasks involve systems with a unique solution and one coefficient zero, where the solution is plausibly visible by inspection, as for example in y = 1, 3x + y = 1. v) Tasks assess solving by inspection, for example by listing several systems and asking the student for the solution of any freely chosen one of them by inspection.	MP.7	Analyze and solve linear equations and pairs of simultaneous linear equations.
1	1/2	1	8.F.1-1	Understand that a function is a rule that assigns to each input exactly one output.	i) Tasks do not involve the coordinate plane or the "vertical line test." ii) Tasks do not require knowledge of the concepts or terms *domain* and *range*. iii) 20% of functions in tasks are non-numerical, e.g., the input could be a person and the output could be his or her month of birth.	MP.2	Define, evaluate, and compare functions.
	1/2	1	8.F.1-2	[Understand that] the graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	i) Functions are limited to those with inputs and outputs in the real numbers. ii) Tasks do not require knowledge of the concepts or terms *domain* and *range*. iii) 80% of tasks require students to graph functions in the coordinate plane or read inputs and outputs from the graph of a	MP.2, MP.5	Define, evaluate, and compare functions.

No. Tasks	Probability	Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
					function in the coordinate plane. iv) 20% of tasks require students to tell whether a set of points in the plane represents a function.		
1	-	1	8.F.3-1	Interpret the equation, y=mx + b as defining a linear function, whose graph is a straight line.	i) Tasks have "thin context" or no context. ii) Tasks require students to approach linear equations from a functional perspective, for example by computing outputs from inputs or by identifying equations that do or do not define one variable as a linear function of the other. iii) Equations can be presented in forms other than y = mx + b. For example, the equation 2x + 2y = 7 can be viewed as a function machine with x the input and y the output - or as a function machine with y the input and x the output.	MP.2, MP.7	Define, evaluate, and compare functions.
1	-	1	8.F.3-2	Give examples of functions that are not linear and prove that they are not linear.	i) Tasks have "thin context" or no context. ii) Tasks require students to demonstrate understanding of function nonlinearity, for example by recognizing or producing equations that do not define linear functions, or by recognizing or producing pairs of points that belong to the graph of the function yet do not lie on a straight line. iii) Tasks do not require students to produce a proof; for that aspect of standard 8.F.3, see Grade 8 PBA Part 2).	MP.7	Define, evaluate, and compare functions.
1	1/3	1	8.G.1a	Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length.	i) Tasks do not have a context.	MP.3,MP.5, MP.8	Understand congruence and similarity using physical models, transparencies, or geometry software.
1	1/3	1	8.G.1b	Verify experimentally the properties of rotations, reflections, and translations: b. Angles are taken to angles of the same measure.	i) Tasks do not have a context.	MP.3,MP.5, MP.8	Understand congruence and similarity using physical models, transparencies, or geometry software.
1	1/3	1	8.G.1c	Verify experimentally the properties of rotations, reflections, and translations: c. Parallel lines are taken to parallel lines.	i) Tasks do not have a context.	MP.3,MP.5, MP.8	Understand congruence and similarity using physical models, transparencies, or geometry software.
1	-	1	7.RP.2d	Recognize and represent proportional relationships between quantities. d. Explain what a point (x, y) on the graph of a proportional relationships means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.	i) Tasks require students to interpret a point (x, y) on the graph of a proportional relationship in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate. (For the explanation aspect of standard 7.RP.2d , see Grade 7 PBA Part 2.)	MP.2, MP.4	Analyze proportional relationships and use them to solve real-world and mathematical problems.
1	-	1	7.NS.1b-1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. b. Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative.	i) Tasks do not have a context. ii) Tasks are not limited to integers. iii) Tasks involve a number line. iv) Tasks do not require students to show in general that a number and its opposite have a sum of 0; for this aspect of standard 7.NS.1b, see Grade 7 PBA Part 2.	MP.5, MP.7	Apply and extend previous understandings of operations with fractions to add, subtract, multiply and divide rational numbers.

No. Tasks	Probability	Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
1	-	1	7.NS.1d	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. d. Apply properties of operations as strategies to add and subtract rational numbers	i) Tasks do not have a context. ii) Tasks are not limited to integers. iii) Tasks may involve sums and differences of 2 or 3 rational numbers. iv) Tasks require students to represent addition and subtraction on a horizontal or vertical number line,[25] or compute a sum or difference, or demonstrate conceptual understanding for example by producing or recognizing an expression equivalent to a given sum or difference. For example, given the sum –8.1 + 7.4, the student might be asked to recognize or produce the equivalent expression –(8.1 – 7.4).	MP.7 MP.5	Apply and extend previous understandings of operations with fractions to add, subtract, multiply and divide rational numbers.
1	-	1	7.NS.3	Solve real-world and mathematical problems involving the four operations with rational numbers.	i) Tasks are one-step word problems. ii) Tasks sample equally between addition/subtraction and multiplication/division. iii) Tasks involve at least one negative number. iv) Tasks are not limited to integers.	MP.1, MP.4	Apply and extend previous understandings of operations with fractions to add, subtract, multiply and divide rational numbers.
1	-	1	7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	i) Tasks may involve issues of strategy, e.g., by providing a factored expression such as y(3+x+k) and a fully expanded expression 3y + xy + k, and requiring students to produce or identify a new expression equivalent to both (such as y(3+x) + yk). ii) Tasks are not limited to integer coefficients.	MP.7	Use properties of operations to generate equivalent expressions
1	-	1	7.EE.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*	-	MP.7	Use properties of operations to generate equivalent expressions
1	-	1	7.EE.4a-1	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers.	i) Comparison of an algebraic solution to an arithmetic solution is not assessed here; for this aspect of standard 7.EE.4a, see Grade 7 PBA Part 2.	MP.1, MP.2, MP.6, MP.7	Solve real-life and mathematical problems using numerical and algebraic expressions and equations

[25] For example, on http://illustrativemathematics.org, see the illustration for 7.NS.1 called "Operations on the number line."

Part 1b. Part 1b consists of nine (9) tasks, each worth 1 point (Type I.1). Table 8-EOY(1b) lists evidence statements for Part (1b). Tasks for this part satisfy the following constraints:

- Each task generates evidence for a single evidence statement in the table and each evidence statement is assessed by at most one task.
- The number of tasks in each content domain is specified by the Form Construction Tables.
- Probabilities are given in cases where sampling is necessary (because the number of tasks in the leftmost column is less than the number of corresponding evidence statements). In these cases, the probability column specifies the probability that any given evidence statement will be assessed on any given form.
- A calculation aid of the specified kind can be provided to students for these tasks.[26]

Table 8-EOY(1b). Blueprint for Grade 8 EOY Part 1b

No. Tasks	Probability	Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
1	-	1	8.EE.4-2	Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	i) Tasks have "thin context". ii) The testing interface can provide students with a calculation aid of the specified kind for these tasks.	MP.6, MP.7 MP.8	Work with radicals and integer exponents
1	-	1	8.EE.5-1	Graph proportional relationships, interpreting the unit rate as the slope of the graph.	i)). Pool should contain tasks with and without contexts. ii) The testing interface can provide students with a calculation aid of the specified kind for these tasks.	MP.1, MP.5	Understand the connections between proportional relationships, lines, and linear equations.
1	-	1	8.EE.5-2	Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has a greater speed.*	i). Pool should contain tasks with and without contexts. ii) The testing interface can provide students with a calculation aid of the specified kind for these tasks.	MP.7	Understand the connections between proportional relationships, lines, and linear equations.
1	-	1	8.EE.6-1	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane.	i) Tasks do not have a context. ii) Given a non-vertical line in the coordinate plane, tasks might for example require students to choose two pairs of points and record the rise, run, and slope relative to each pair and verify that they are the same. iii) For the aspect of standard 8.EE.6 about explaining this in general, see Grade 8 PBA Part 2. iv) The testing interface can provide students with a calculation aid of the specified kind for these tasks.	MP.2, MP.7	Understand the connections between proportional relationships, lines, and linear equations.
1	-	1	8.F.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greaert rate of change.*	i) Tasks have "thin context" or no context. ii) The testing interface can provide students with a calculation aid of the specified kind for these tasks.	MP.2, MP.5	Define, evaluate, and compare functions.
1	-	1	8.G.7-1	Apply the Pythagorean Theorem in a simple planar case.	i) Tasks have "thin context" or no context. ii) Tasks require students to find one side of a right triangle in the plane, given the other two sides. iii) In 50% of tasks, the answer is a whole number and is to be given as a whole number. iv) In 50% of tasks, the answer is irrational and is to be given approximately to three decimal places. v) The testing interface can provide students with a calculation aid of the specified kind for these tasks.		Understand and apply the Pythagorean Theorem.

[26] If so, then students will not be able to return to tasks in Table 8-EOY(1a), Table 8-EOY (2a), Table 8-EOY (3a), Table 8-EOY (3b) or Table 8-EOY (3c) after beginning work on these tasks.

No. Tasks	Probability	Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
1	1/2	1	8.G.7-2	Apply the Pythagorean Theorem in a simple three-dimensional case.	i) Tasks have "thin context" or no context. ii) Tasks require students to find one side of a right triangle in three dimensions, given information on a diagram that straightforwardly determines the other two sides. iii) In 50% of tasks, the answer is a whole number and is to be given as a whole number. iv) In 50% of tasks, the answer is irrational and is to be given approximately to three decimal places. v) The testing interface can provide students with a calculation aid of the specified kind for these tasks.		Understand and apply the Pythagorean Theorem.
	1/2	1	8.G.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	i) The testing interface can provide students with a calculation aid of the specified kind for these tasks.		Understand and apply the Pythagorean Theorem.
1	-	1	7.RP.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.*	i) Tasks have a context. ii) The testing interface can provide students with a calculation aid of the specified kind for these tasks.	MP.2, MP.6, MP.4	Analyze proportional relationships and use them to solve real-world problems.
1	-	1	7.RP.2a	Recognize and represent proportional relationships between quantities: a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	i) Tasks have "thin context" or no context. ii) Tasks may offer opportunites for students to investigate a relationship by constructing graphs or tables; however, students can opt not to use these tools. iii) Tasks are not limited to ratios of whole numbers. iv) The testing interface can provide students with a calculation aid of the specified kind for these tasks.	MP.2 MP.5	Analyze proportional relationships and use them to solve real-world problems.

Part 2a. Part 2a consists of five (5) tasks, each worth 1 point (Type I.1). Table 8-EOY(2a) lists evidence statements for Part (2a). Tasks for this part satisfy the following constraints:

- Each task generates evidence for a single evidence statement in the table and each evidence statement is assessed by at most one task.
- The number of tasks in each content domain is specified by the Form Construction Tables.
- Probabilities are given in cases where sampling is necessary (because the number of tasks in the leftmost column is less than the number of corresponding evidence statements). In these cases, the probability column specifies the probability that any given evidence statement will be assessed on any given form.
- Calculation aids are not provided to students for tasks in Part 2a except for appropriate accessibility purposes.

Table 8-EOY(2a). Blueprint for Grade 8 EOY Part 2a

No. Tasks	Probability	Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
1	-	5	8.NS.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	i) Tasks do not have a context. ii) 50% of tasks require students to write a fraction a/b as a repeating decimal by showing, filling in, or otherwise producing the steps of a long division a ÷ b. iii) 50% of tasks require students to write a given repeating decimal as a fraction.	MP.7, MP.8	Know that there are numbers that are not rational, and approximate them by rational numbers
1	-	5	8.NS.2	Use rational approximations of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g. π^2). *For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*	i) Tasks do not have a context.	MP.5, MP.7, MP.8	Know that there are numbers that are not rational, and approximate them by rational numbers
1	-	5	8.F.5-1	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear).	i) Pool should contain tasks with and without contexts.	MP.2, MP.5	Use functions to model relationships between quantities.
1	-	5	8.F.5-2	Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	i Pool should contain tasks with and without contexts.	MP.2, MP.5, MP.7	Use functions to model relationships between quantities.
1	1/2	5	8.SP.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.	i) Tasks might have spreadsheet-like technology features, such as the ability to select data ranges for the two axes and have the scatter plot automatically generated.	MP.3, MP.5, MP.7	Investigate patterns of association in bivariate data.
	1/2	5	8.SP.2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the	i) Tasks might have technology features such as the ability to adjust the position of a line and rotate it.	MP.2, MP.5, MP.7	Investigate patterns of association in bivariate data.

No. Tasks	Probability	Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
				data points to the line.			

Part 2b. Part 2b consists of one (1) task, worth 1 point (Type I.1). A calculation aid of the specified kind can be provided to students for this task.[27]

Table 8-EOY(2b). Blueprint for Grade 8 EOY Part 2b

No. Tasks	Probability	Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
1	-	5	8.SP.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*	i) One-third of tasks involve basic comprehension questions about a two-way table, such as "How many students who don't have chores have a curfew?" ii) One-third of tasks involve computing marginal marginal sums or marginal percentages. iii) One-third of tasks involve interpretation or patterns of association. iii) Tasks that require finding missing values within the categories are excluded. iv) Tasks are limited to two-by-two tables. v) The testing interface can provide students with a calculation aid of the specified kind for these tasks.	MP.2, MP.4, MP.5, MP.7	Investigate patterns of association in bivariate data.

[27] If so, then students will not be able to return to tasks in Table 8-EOY(1a), Table 8-EOY (2a), Table 8-EOY (3a), Table 8-EOY (3b) or Table 8-EOY (3c) after beginning work on these tasks.

Part 3a. Part 3a consists of two (2) tasks worth 2 points, totaling 4 points in all.

Table 8-EOY(3a) lists Evidence Statements for Part (3a). Tasks for this part satisfy the following constraints:

- Each task on Part(3a) generates evidence for a single Evidence Statement in the table.
- Each Evidence Statement generates one or two tasks worth a total of 4 points.
- A calculation aid of the specified kind can be provided to students for these tasks.[28]

Table 8-EOY(3a). Evidence Statement for Grade 8 EOY Part 3a

Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
1	8.EE.C.Int.1	Solve word problems leading to linear equations in one variable whose solutions require expanding expressions using the distributive property and collecting like terms.	i) For an example of an illustrative task, see 2009 CCRS: "If a bar of soap balances 3/4 of a bar of soap and 3/4 of a pound, how much does the bar of soap weigh?"	MP.4, MP.6, MP.7	Analyze and solve linear equations and pairs of simultaneous linear equations.
1	8.EE.8c	Analyze and solve pairs of simultaneous linear equations. c. Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*	i) Mixture problems are no more than 20% of tasks. ii) For an example of an illustrative task, see ITN Appendix F, section A, "Illustrations of innovative task characteristics," sub-section 6, "Expressing mathematical reasoning," sub-section "Illustrative tasks that require students to express mathematical reasoning," the problem of the two shepherds.	MP.1, MP.5, MP.6, MP.7	Analyze and solve linear equations and pairs of simultaneous linear equations.

Part 3b. Part 3c consists of three (3) tasks: each worth two points, totaling 6 points in all.

Table 8-EOY(3b) (see below) lists evidence statements for Part 3b.

- Each task on Part 3c generates evidence for a single evidence statement key in the table and each evidence statement is assessed by at most one task.
- Each of the evidence statements in Table 8-EOY(3b) is equally likely to be assessed .
- Calculation aids are not provided to students for tasks in Part 3c except for appropriate accessibility purposes.

Table 8-EOY(3b). Equiprobable Evidence Statements for Grade 8 EOY Part 3b

Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*

[28] If so, then students will not be able to return to tasks in Table 7-EOY(1a) after beginning work on these tasks.

Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
1	8.G.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	i) Tasks do not have a context.	MP.2, MP.7	Understand congruence and similarity using physical models, transparencies, or geometry software.
1	8.G.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	i) Tasks have "thin context" or no context.	MP.2, MP.3, MP.5	Understand congruence and similarity using physical models, transparencies, or geometry software.
1	8.G.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two dimensional figures, describe a sequence that exhibits the similarity between them.	i) Tasks do not have a context.	MP.2, MP.7	Understand congruence and similarity using physical models, transparencies, or geometry software.

Part 3c. Part 3c consists of three (3) tasks worth two points each, totaling 6 points in all.

Table 8-EOY(3c) (see below) lists evidence statements for Part 3c.

- Each task on Part 3d generates evidence for a single evidence statement key in the table and each evidence statement is assessed by at most one task.
- Each of the evidence statements in Table 8-EOY(3d) is equally likely to be assessed subject to the additional constraints below.
- A calculation aid of the specified kind can be provided to students for these tasks.[29]

Table 8-EOY(3c). Equiprobable Evidence Statements for Grade 8 EOY Part 3c

Claim Code	Evidence Statement Key	Evidence Statement Text	Clarifications, limits, emphases, and other information intended to ensure appropriate variety in tasks	Relationship to Mathematical Practices	*Relevant CCSSM cluster heading (for reference and to remind developers of the general goals of the standards in this area)*
5	8.F.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x,y) values, including reading these from a table or from a graph.	i) Pool should contain tasks with and without contexts. iii) The testing interface can provide students with a calculation aid of the specified kind for these tasks.	MP.2, MP.4	Use functions to model relationships between quantities.
5	8.G.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	i) The testing interface can provide students with a calculation aid of the specified kind for these tasks. ii) The testing interface can include a formula sheet with the indicated formulas to jog the student's memory. The formulas are given but not labeled, so as to require knowing the formulas.	MP.1, MP.5	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.
5	8.SP.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*	i) Tasks are word problems based on bivariate measurement data that require students to use the equation of a linear model. ii) The testing interface can provide students with a calculation aid of the specified kind for these tasks.	MP.2, MP.4, MP.6, MP.7	Investigate patterns of association in bivariate data.

[29] If so, then students will not be able to return to tasks in Table 8-EOY(1a), Table 8-EOY (2a), Table 8-EOY (3a), Table 8-EOY (3b) or Table 8-EOY (3c) after beginning work on these tasks.

Grade 8 Summary

Number of **Tasks** by Type and Component

Type	PBA(1)	PBA(2)	PBA(3)	EOY	Total
I / 1 point	10			34	44
I / 2 points	1			8	9
I / 3 points				0	0
I / 4 points				1	1
II / 3 points		2			2
II / 4 points		2			2
III / 3 points			2		2
III / 6 points			1		1

48% of pts

Number of points by sub-claim (disjoint categories)

Claim Code	Sub-Claim	Gr. N	Gr. N-1	Total
1	A but not C or E	42	12	54
2	A and C	14		14
3	A and E[31]	0		0
4	D	6	6[32]	12
5	B	12		12
	Total	**74**	**18**	**92**

Approximate Points by Grade, Cluster and Domain

Does not include Sub-Claim D Modeling/application, or previous grade. Italicized numbers are the sum of points located to the left and below. Some entries are approximate; roundoff errors may lead to apparent inconsistencies. True total is shown in parentheses.

Mean points per task (MPPT):[30]

Component	Points	Tasks	MPPT
PBA(1a)	8	8	1.00
PBA(1b)	2	1	2.00
PBA(1c)	2	2	1.00
PBA(2)	14	4	3.50
PBA(3)	12	3	4.00
EOY(1)	28	28	1.00
EOY(2)	6	6	1.00
EOY(3)	20	9	2.22
EOY(4)			
Overall	**92**	**61**	**1.51**

[30] Mean points per task (MPPT) is tabulated as a rough measure of "surface richness" of the test. Note for comparison that MCAS grade 8 has MPPT = 54/42 = 1.28. A related heuristic is the fraction of total points arising from 1-point tasks (Type I.1). A target for this is 50%-60%, with high school at the higher end of the range.

Grade 8				65 *(66)*
8.NS			2	
8.NS .A		2		2
8.NS.Ax	2			
8.EE			32	
8.EE.A		6		6
8.EE.Ax	6			
8.EE.B		7		7
8.EE.Bx	7			
8.EE.C	4	19		19
8.EE.Cx	15			
8.F			10	
8.F.A		6		6
8.F.Ax	6			
8.F.B		4		4
8.F.Bx	4			
8.G			17	
8.G.A		12		12
8.G.Ax	12			
8.G.B	1	3		3
8.G.Bx	2			
8.G.C		2		2
8.G.Cx	2			
8.SP			4	
8.SP.A		4		4
8.SP.Ax	4			

Mathematical Practices

- Coverage constraint: Each MP is represented by at least one practice-forward task:
- Content integration constraint (in each content domain, there is at least one task associated with one or more MPs):
- Practice weight constraint: Percent of points from tasks that are practice-forward or practice-related: ≥ XX%